

ATTACHMENT 5

CLOSURE PLANS

CLOSURE PLANS AND FINANCIAL REQUIREMENTS

This Closure Plan describes the steps that will be taken in order to close the hazardous waste management units (HWMUs) at the ATK Launch Systems Inc. – Promontory (ATK) facility. Estimates of the closure costs associated with these steps are also detailed in this Plan. Closure Plans are included in this document for the following HWMUs: M-186; M-705S; E-501; M-136; M-225; T-29B; M-47 and M-603.

The closure plans for each HWMU were developed in order to comply with R315-8-7 and R315-8-9.9 of the Utah Administrative Code (UAC). UAC R315-8-7 incorporates by reference the requirements of 40 CFR 264 Subpart G. The closure cost estimates were made in accordance with UAC R315-8-8, which incorporates by reference the requirements of 40 CFR 264 Subpart H.

All facilities in current operation are being managed in a manner that we believe will facilitate clean closures. Historical sites, such as the LTTAs do require post closure care, and are covered in our Post Closure Permit.

1.0 Closure Plans [40 CFR 270.14(b)(13), 270.23(a)(2), and 264.112(a)(1) &(2) and UAC R315-3, R315-8]

This closure plan identifies all of the steps needed to close ATK's storage and treatment facilities, as identified above, at the end of their operating life. Copies of this plan will be maintained by ATK Environmental Services in central files at the Promontory site. The closure plans will be followed as written, unless modification to the original plans have been submitted and approved by the Utah Department of Environmental Quality, Division of Solid and Hazardous Waste (DEQ). Upon update/revision approval, revised pages or complete documents will be sent to all plan addressees.

1.1 Closure Performance Standards [40 CFR 264.111 and UAC R315-8-7]

Closure standards specified under RCRA are designed to be protective of human health and the environment. These goals can best be achieved by one of the following closure methods:

- Clean closure – this method refers to residential risk based levels. Cleanup to residential risk based levels, as outlined in UAC R315-101, will be considered clean closure. Clean closure is the most desirable approach, and includes removal of all contaminants, or removal to the risk based level.
- Site Management – closure where waste remains in place and specific post- closure care is required.

For the purposes of estimating closure costs, it is assumed that all of the HWMUs will be clean closed. Clean closure can be achieved by cleaning the units to background conditions or by meeting the clean closure equivalency as defined in UAC R315-101-6(c)(1). All closures will assess real and potential impacts to human and ecological exposures.

Preliminary remediation goals can be established prior to implementing any of the closure plans. ATK may use the screening levels published by USEPA Region III “Risk-Based Concentrations” (RBC) and the USEPA Region IX “Preliminary Remediation Goals” (PRG), or they can establish site-specific, risk-based clean closure goals in accordance with UAC R315-101-5.2.

If contamination in the form of hazardous waste or constituents are discovered in the soil or ground water above risk based goals, further investigation will be performed to determine the extent of the contamination. Based on the results of this investigation, a Corrective Measure Study (CMS) may be prepared for review and approval by the DEQ, prior to implementation.

If this investigation suggests that clean closure is not a practicable approach, ATK will prepare a Site Management Plan for DEQ's approval. Upon approval, the unit will be closed by implementing appropriate site management or post closure requirements. If this approach is necessary, the Post Closure Permit may be modified to provide post closure care for the sites that are not clean closed.

1.2 Partial Closure and Final Closure Activities [40 CFR 264.112(b)(1) through (b)(7) and UAC R-315-8-7]

This plan is designed to accommodate both partial and final closure. The plan will include separate steps to close 1) storage, consolidation & disassembly areas and 2) open burning and open detonation areas. The maximum extent of the operations is shown in Closure Plan Figures 1 through 8 at the end of the Closure Plan. These figures also include the "area of influence" associated with each facility. The area of influence includes loading and off loading areas adjacent to the buildings, as well as areas around the burn grounds that may have been impacted by smoke from the burn grounds, based on soil and vegetation samples already obtained and tested by ATK. The area of influence figures are used for estimating closure costs only. The extent of sampling and remediation around the HWMUs will be based on sample results.

ATK implemented annual soil monitoring of the M-136 and M-225 burn grounds in 1991. The purpose of this monitoring is to determine if ATK burn ground activities are adversely impacting the environment. The Zone of Engineering Control (ZOEC) Soil Sampling Plan used for this monitoring was prepared and submitted in the original permit application in 1991 as appendix 13.H. While some aspects of this plan are outdated, ATK believes the sample selection protocol and total number of samples obtained each year are valid. Semiannual groundwater monitoring is conducted, in accordance with ATK's Post-Closure Permit. ATK is currently investigating the need for remediation of contaminated groundwater as described in the Post-Closure Permit. It is not expected that the storage and treatment activities addressed in this Permit are impacting groundwater.

1.3 Maximum Waste Inventory and Disposal Method [40 CFR 264.112(b)(3) and UAC R315-8-7]

The maximum inventory of hazardous waste onsite at any one time during the life of the facilities is based on permit limitations for inert facilities, and Quantity/Distance(QD) limitations for live materials, based on Department of Defense Explosive Safety Standard 4145.26M or a

lesser designated amount. If storage capacities change, the Permit will be modified. These quantity limitations are listed below:

| | |
|----------------------|--|
| M-186 (inert) ----- | 400 ea. 55 gallon drum equivalent |
| M-705S (inert) ----- | 32 ea. 55 gallon drum equivalent |
| E-501 (inert) ----- | 160 ea. 55 gallon drum equivalent |
| M-136 (live) ----- | 106,000 lbs 1.3 / 20,000 lbs 1.1 |
| M-225 (live) ----- | 50,000 lbs 1.3 / 1,500 lbs 1.1 |
| T-29B (inert) ----- | 1 ea. 55 gallon drum (pure) equivalent |
| M-47 (live) ----- | 840,000 lbs 1.3 / 21,000 lbs 1.1 |
| M-603 (live) ----- | 240,000 lbs 1.3 / 65,000 lbs 1.1 |

ATK treats reactive hazardous wastes on-site at the M-136 and M-225 open burning grounds. These two waste treatment units are currently operated under interim status. Wastewater is loaded onto ATK owned vacuum trucks and transported to two on-site UPDES permitted treatment facilities. All other hazardous wastes are transported via a commercial carrier to fully permitted disposal or recycling facilities.

1.4 Schedule for Closure [40 CFR 264.112(b)(6) and UAC R315-8-7]

Tables 1 - 3 of this plan provide an estimated closure schedule for all activities associated with implementation of this closure plan. If sample results indicate the need for additional investigation or a CMS, the schedule will be modified to accommodate the changes. Final closure will be certified by an independent professional engineer licensed in Utah.

1.4.1 Time Allowance for Closure [40 CFR 264.113(a) and (b) and UAC R315-8-7]

Final closure is expected to be initiated within 30 days of receipt of the final volume of hazardous waste. If more time is required, ATK will submit a request to the Executive Secretary. All hazardous wastes will be removed or treated within 90 days of (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever is later. Final closure activities will be completed within 180 days of (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever is later.

1.4.2 Extensions for Closure time [40 CFR 264.113(a) and (b) and UAC R315-8-7]

If closure activities cannot be completed within the time designated in this closure plan, a permit modification and request for additional time will be submitted to the DSHW. The request will state the reason for needed additional time and the status of the closure underway. It will also address any added measures that must be followed to minimize any threats to human health or the environment during the extension period.

1.5 Closure Procedures [40 CFR 264.112 and 264.114 and UAC R315-8-7]

Past disposal practices have created many solid waste management units throughout the Promontory plant. These sites have been, and are being investigated to determine the appropriate

actions needed to close these areas. This plan does not address these sites, but deals with our permitted storage and treatment facilities.

All permitted treatment and storage facilities have been designed and managed to minimize possible contamination. This includes chemical resistant concrete coatings, blind containment sumps, regular inspections and maintenance, prompt clean up of any spilled materials, and annual ZOEC sampling and testing of our burn grounds as mentioned above. These practices should greatly reduce the need for significant remediation efforts upon closure.

1.5.1 Soil and Ground Water Sampling

Groundwater sampling is not covered under this plan, but a groundwater monitoring program is currently in place as discussed above. Soil sampling should not be required for any of the permitted facilities, except for the two burn ground areas (M-136, M225). In preparation for closure, soil samples will be collected at the burn ground areas to supplement the ZOEC soil sample data that has been collected at these HWMUs.

Soil sampling will include samples taken within the top 12" of the surface. Soil samples will first be collected at those locations that are most likely impacted by waste management practices – as approved by DEQ personnel. 20 soil samples will be collected at M-136 and 12 soil samples will be collected at M-225. These samples will be sent to a State of Utah certified laboratory for analysis. Sample collection, preservation and handling methods will follow those outlined in the Waste Analysis Plan of this permit, and will be in compliance with all applicable SW-846 methods. Tables 4 & 5 include lists of potential contaminants based on a review of profiles for materials treated at these facilities. These tables will serve as the analytical constituent list for all soil samples obtained from the respective burn ground. While this list is not 100% complete, it is a good indicator of potential contamination from the open burning operation. If any of these constituents are found above the risk based level, an additional sampling plan will be submitted to the State for approval.

1.5.1.1 Sampling Equipment Decontamination Procedures

All field sampling equipment will arrive on site pre-cleaned, and will be decontaminated following standard protocol and the waste analysis plan in this permit. A mobile decontamination station will be utilized to clean all sampling equipment that could come in contact with soil samples.

1.5.1.2 Sampling Waste Management

All waste generated from field sampling and decontamination operations will be managed in accordance with the current 40 CFR and UAC R315 rules. Water used in the decontamination process will be sent to the M-705 wastewater treatment plant onsite and discharged in accordance to its UPDES permit. Soils will be stored in UN drums pending lab results. Any soil determined to be hazardous waste, in accordance with 40 CFR 261.3, will be managed appropriately. Soils exceeding the Universal Treatment Standard levels will also be managed as a hazardous waste.

All non-aqueous hazardous waste generated by the sampling operation will be transported by a third party contractor off site to a fully permitted TSDF for disposal. Any waste determined not to be hazardous under EPA regulations will be sent via third party to a non-hazardous landfill for disposal.

A field log will be maintained to track and identify all samples. This log will include sample numbers, dates, times, sample depth, samplers name, weather conditions and test methods and constituents for which to analyze.

1.5.1.3 Health and Safety Procedures

Soil and water sampling will be performed by trained and qualified personnel. A determination of appropriate PPE to be utilized for this effort will be determined at the time of closure. PPE selection will be based on potential hazards as determined at the time of closure, and in consultation with Industrial Hygiene.

Soil sampling should only be required at the burn grounds, because of well maintained secondary containment and waste management practices during the entire life of all other permitted facilities. Protective clothing appropriate for the task will be used during removal of waste and during decontamination of containment areas for the permitted storage and treatment units.

1.5.2 Determining Cleanup Goals

For the purposes of estimating closure costs, it is assumed that all of the HWMUs will be clean closed. Clean closure can be achieved by cleaning the units to background conditions or by meeting the clean closure equivalency as defined in UAC R315-101-6(c)(1). All closures will assess real and potential impacts to human and ecological exposures. It is anticipated that the HWMUs will be clean closed and will not require post-closure care.

1.5.3 Site Cleanup

1.5.3.1 Inventory Removal [40 CFR 264.112(b)(3) and UAC R315-8-7]

The maximum inventory of hazardous waste on hand at any given permitted facility is based on the maximum allowed under this permit, or a quantity distance limit for explosives, imposed by the Department of Defense and ATK. These limitations are specified in section 1.3 of this closure plan.

Transportation and disposal of all hazardous waste during closure of a facility will be based on hiring of a third party company. The transportation contractor will be licensed and insured, and the disposal facility will be permitted with the EPA or State to accept the waste ATK sends. The only exception to the use of a third party disposal facility, will be for disposal of reactive hazardous wastes.

Due to the inherent hazardous nature of reactive wastes, and limited disposal options nation wide, ATK plans to properly treat and dispose of this waste on site. Cost calculations for treatment, disposal and equipment decontamination will be based on maintaining an ATK staff sufficient to complete these efforts.

1.5.3.2 Disposal or Decontamination of Equipment and Structures [40 CFR 264.112(b)(4), 264.112(e), and 264.114 and UAC R315-8-7]

Decontamination of equipment and structures at the Promontory facilities will follow one of two plans. These plans cover the open burning units, and all other facilities.

The open burning facilities utilize burn trays, pipes, concrete vaults or rocket cases to contain the waste to be treated. Most of the material burned is hazardous by characteristic only. Any waste that may be contaminated with, or contains solvents or hazardous heavy metals is designated as a derived waste, and the ash collected for offsite disposal. Therefore, except for the derived trays, all burn ash in trays, vaults, cases, and on the ground around these units will be collected and sent to the on site ATK landfill for disposal. The burn trays will then be high pressure water washed and the rinsate sent to an off site disposal facility. After the final rinse, a composite sample from the trays will be collected and analyzed at an independent lab to verify proper tray decontamination. Each sample will include rinsate from 5 trays. Samples will be tested for those constituents specified in tables 4 & 5 as appropriate.

All facilities except for the burn grounds, are designed with secondary containment. This containment includes a concrete pad with curbing and blind sump to simplify wash down and cleanup. The entire containment pad and sump is coated with a chemical resistant epoxy to prevent liquid migration through the concrete. These pads are inspected daily, when in use, and maintained as needed. After removal of all containerized waste, the containment pads will be high pressure water washed, and rinsate collected for third party off site disposal. After final wash, rinse water samples will be collected from each sump and tested for the organics and metals found in table 4 or 5 of this plan, to verify cleanliness. All samples will be sent to a State certified third party laboratory for analysis.

1.5.3.3 Closure Containers [40 CFR 264.178, 264.112(b)(3), and 270.14(b)(13) and UAC R315-8-9.9, R315-807, and R315-3-5(b)(13)]

All hazardous ash, rinse water and other contaminated debris will be placed in a UN container or a bulk USDOT authorized containers for offsite shipment to permitted disposal facilities. Empty containers will be cleaned in compliance with 49 CFR, and sent for disposal.

2.0 Closure Certification [40 CFR 264.115 and UAC R315-8-7]

Within 60 days of completion of closure of each facility, ATK will submit to the DSHW, a certification by registered mail, that the hazardous waste management facility was closed in compliance with this closure plan. This certification will be signed by ATK and an independent registered professional engineer licensed in Utah. Documentation supporting the engineer's registration will be provided upon request.

3.0 Closure Cost Estimate [40 CFR 264.142]

The total closure cost is estimated to be \$704,082. A detailed breakdown of these costs is presented below in the Closure Cost Estimate Figures 1 through 8 in current dollars. The entire estimate is based on hiring a third party, except for the thermal treatment and disposal of reactive waste, which will be handled onsite.

4.0 Financial Assurance Mechanism for Closure [40 CFR 264.143 and R315-309]

ATK will maintain current financial assurance meeting the requirements outlined in the above referenced Federal and State regulations. ATK will provide documentation to DSHW supporting compliance with financial mechanism requirements.

5.0 Post Closure Plan

If it is determined that a HWMU can not be clean closed, contaminants may be left in place, and ATK will develop a post-closure or site management plan for all areas of the unit(s) that can not be clean closed. Any proposal for post-closure care or site management will be developed in accordance with UAC R315-8-7, UAC R315-8-8 and 40 CFR 264 Subparts G and H and will be submitted to the Executive Secretary for approval. If this approach is necessary, the Post Closure Permit may be modified to provide post closure care for the sites that are not clean closed.

| TABLE 1 Estimated Closure Schedule for Each Facility (M-136, M-225) | | | |
|---|---|-------------------|------------------------|
| Task | Closure Activity | Start Date | Completion Date |
| 1 | Mobilize | Day-1 | D-3 |
| 2 | Thermally treat reactive waste and place ash in landfill or prepare for off site disposal as appropriate. | D-4 | D-14 |
| 3 | Decontaminate burn trays and clean area around trays. | D-15 | D-25 |
| 4 | Collect soil samples and obtain lab results | D-26 | D-50 |
| 5 | Demobilize | D-51 | D-53 |
| 6 | Review and validate soil and water lab results | D-54 | D-74 |
| 7 | Write closure report and obtain independent engineer closure certification | D-50 | D-100 |
| 8 | Monitor and implement post-closure activities | D-100 If required | To be determined |

| TABLE 2 Estimated Closure Schedule for Each Facility (M-47, M-603) | | | |
|--|---|-------------------|------------------------|
| Task | Closure Activity | Start Date | Completion Date |
| 1 | Mobilize | Day-1 | D-3 |
| 2 | Transport reactive waste to the M-136 Burn Grounds | D-4 | D-14 |
| 3 | Thermally treat reactive waste | D-15 | D-25 |
| 4 | Sweep and clean floor as needed | D-26 | D-36 |
| 5 | Visually inspect building and loading area looking for signs of contamination | D-37 | D-47 |
| 6 | Demobilize | D-48 | D-51 |
| 7 | Obtain independent engineer closure certification | D-52 | D-82 |
| 8 | Prepare and submit closure letter to DEQ | D-83 | D-93 |

| TABLE 3 Estimated Closure Schedule for Each Facility (M-186, M-705S, E-501, T-29) | | | |
|---|---|-------------------|------------------------|
| Task | Closure Activity | Start Date | Completion Date |
| 1 | Mobilize | Day-1 | D-3 |
| 2 | Profile and prepare waste for offsite shipment | D-4 | D-44 |
| 3 | Ship waste to off site permitted TSDF | D-45 | D-65 |
| 4 | Sweep and wash down building floor as needed | D-66 | D-70 |
| 5 | Visually inspect building and loading area looking for signs of contamination | D-71 | D-73 |
| 6 | Demobilize | D-74 | D-77 |
| 7 | Obtain independent engineer closure certification | D-78 | D-108 |
| 8 | Prepare and submit closure letter to DEQ | D-109 | D-120 |

| TABLE 4 | | |
|-------------------------------|-----------------------|----------------------|
| M-136 constituents of concern | | |
| Explosives | Organics/other | Metals |
| HMX | Ammonium Perchlorate | Cadmium |
| RDX | 1,1,1-Trichloroethane | Barium |
| Nitroglycerin | Tetrachloroethylene | Chromium |
| | Acetone | Silver |
| | Pyridine | Lead |
| | Methylene Chloride | Mercury |
| | Carbon Tetrachloride | Molybdenum Disulfide |
| | Benzene | Cobalt |
| | | |

| TABLE 5 | | |
|-------------------------------|-----------------------|----------------------|
| M-225 constituents of concern | | |
| Explosives | Organics/other | Metals |
| HMX | Ammonium Perchlorate | Cadmium |
| RDX | 1,1,1-Trichloroethane | Barium |
| Nitroglycerin | Tetrachloroethylene | Chromium |
| | Acetone | Silver |
| | Pyridine | Lead |
| | Methylene Chloride | Mercury |
| | Carbon Tetrachloride | Molybdenum Disulfide |
| | Benzene | Cobalt |
| | | Sodium Azide |

Figure 1

CLOSURE COST ESTIMATE, M-186

| | | |
|----|---|-------------------|
| 1. | Removal of Waste Inventory | <u>Total (\$)</u> |
| | a. Transportation & Disposal (400 drums @ \$250/drum) | 100,000 |
| | b. Technician Labor (32 hrs @ \$35/hr) | 1,120 |
| 2. | Decontaminating Pad | |
| | a. Technician Labor (16 hrs @ \$35/hr) | 560 |
| | b. Transportation & Disposal 500 gal. of rinse water @ \$4.00/gallon | 2,000 |
| 3. | Water Sampling & Analysis | |
| | a. Technician Labor (4 hrs @ \$35/hr) | 140 |
| | b. Sample Analysis (4 @ 500/sample) | 2,000 |
| 4. | Closure Certification | |
| | a. Engineer Labor (32 hrs @ \$75/hr) | 2,400 |
| | b. Engineer Expenses (4 days @ \$100/day) | 400 |
| | | <hr/> |
| | Subtotal | \$108,620 |
| | Contingency: 15 percent | \$16,293 |
| | Administration: 15 percent | \$16,293 |
| | | ===== |
| | Total | \$141,206 |

Figure 2

CLOSURE COST ESTIMATE, M-705S

| | | |
|----|---|-------------------|
| 1. | Removal of Waste Inventory | <u>Total (\$)</u> |
| | a. Transportation & Disposal (32 drums @ \$250/drum) | 8,000 |
| | b. Technician Labor (16 hrs @ \$35/hr) | 560 |
| 2. | Decontaminating Pad | |
| | a. Technician Labor (16 hrs @ \$35/hr) | 560 |
| | b. Transportation & Disposal 500 gal. of rinse water @ \$4.00/gallon | 2,000 |
| 3. | Water Sampling & Analysis | |
| | a. Technician Labor (4 hrs @ \$35/hr) | 140 |
| | b. Sample Analysis (1 @ 500/sample) | 500 |
| 4. | Closure Certification | |
| | a. Engineer Labor (32 hrs @ \$75/hr) | 2,400 |
| | b. Engineer Expenses (4 days @ \$100/day) | 400 |
| | | <hr/> |
| | Subtotal | \$14,560 |
| | Contingency: 15 percent | \$2,184 |
| | Administration: 15 percent | \$2,184 |
| | | ===== |
| | Total | \$18,928 |

Figure 3

CLOSURE COST ESTIMATE, E-501

| | | |
|----|---|-------------------|
| 1. | Removal of Waste Inventory | <u>Total (\$)</u> |
| | a. Transportation & Disposal (160 drums @ \$250/drum) | 40,000 |
| | b. Technician Labor (16 hrs @ \$35/hr) | 560 |
| 2. | Decontaminating Pad | |
| | a. Technician Labor (16 hrs @ \$35/hr) | 560 |
| | b. Transportation & Disposal 500 gal. of rinse water @ \$4.00/gallon | 2,000 |
| 3. | Water Sampling & Analysis | |
| | a. Technician Labor (4 hrs @ \$35/hr) | 140 |
| | b. Sample Analysis (1 @ 500/sample) | 500 |
| 4. | Closure Certification | |
| | a. Engineer Labor (32 hrs @ \$75/hr) | 2,400 |
| | b. Engineer Expenses (4 days @ \$100/day) | 400 |
| | | <hr/> |
| | Subtotal | \$46,560 |
| | Contingency: 15 percent | \$6,984 |
| | Administration: 15 percent | \$6,984 |
| | | ===== |
| | Total | \$60,528 |

Figure 4

CLOSURE COST ESTIMATE, M-136

| | | |
|----|---|-------------------|
| 1. | Removal of Waste Inventory | <u>Total (\$)</u> |
| | a. Treatment & Disposal (100,000 lbs @ \$.20/lb) | 20,000 |
| 2. | Decontaminating Trays | |
| | a. Technician Labor (32 hrs @ \$35/hr) | 1,120 |
| | b. Transportation & Disposal 1,000 gal. of rinse water @ \$4.00/gallon | 4,000 |
| 3. | Water & Soil Sampling & Analysis | |
| | a. Technician Labor (80 hrs @ \$35/hr) | 2,800 |
| | b. Sample Analysis (20 @ 600/sample) | 12,000 |
| 4. | Excavation & Removal of Contaminated Soil | |
| | a. Excavate & Load Trucks 30 hrs @ 100 | 3,000 |
| | b. Transportation & Disposal 50 tons @ 100 | 5,000 |
| 5. | Closure Certification | |
| | a. Engineer Labor (40 hrs @ \$75/hr) | 3,000 |
| | b. Engineer Expenses (5 days @ \$100/day) | 500 |
| | | <hr/> |
| | Subtotal | \$51,420 |
| | Contingency: 15 percent | \$7,713 |
| | Administration: 15 percent | \$7,713 |
| | | ===== |
| | Total | \$66,846 |

Figure 5

CLOSURE COST ESTIMATE, M-225

| | | |
|----|---|-------------------|
| 1. | Removal of Waste Inventory | <u>Total (\$)</u> |
| | a. Treatment & Disposal (50,000 lbs @ \$.25/lb) | 12,500 |
| 2. | Decontaminating Trays | |
| | a. Technician Labor (24hrs @ \$35/hr) | 840 |
| | b. Transportation & Disposal 500 gal. of rinse water @ \$4.00/gallon | 2,000 |
| 3. | Water & Soil Sampling & Analysis | |
| | a. Technician Labor (40 hrs @ \$35/hr) | 1,400 |
| | b. Sample Analysis (12 @ 600/sample) | 7,200 |
| 4. | Excavation & Removal of Contaminated Soil | |
| | a. Excavate & Load Trucks 20 hrs @ 100 | 2,000 |
| | b. Transportation & Disposal 25 tons @ 100 | 2,500 |
| 5. | Closure Certification | |
| | a. Engineer Labor (30 hrs @ \$75/hr) | 2,250 |
| | b. Engineer Expenses (4 days @ \$100/day) | 400 |
| | | <hr/> |
| | Subtotal | \$31,090 |
| | Contingency: 15 percent | \$4,664 |
| | Administration: 15 percent | \$4,664 |
| | | <hr/> <hr/> |
| | Total | \$40,418 |

Figure 6

CLOSURE COST ESTIMATE, T-29B

| | | |
|----|---|-------------------|
| 1. | Hydrazine Dilution and Removal of Waste Inventory | <u>Total (\$)</u> |
| | a. Transportation & Disposal (2 drums @ \$400/drum) | 800 |
| | b. Technician Labor (16 hrs @ \$35/hr) | 560 |
| 2. | Decontaminating Pad | |
| | a. Technician Labor (10 hrs @ \$35/hr) | 350 |
| | b. Transportation & Disposal 500 gal. of rinse water @ \$4.00/gallon | 2,000 |
| 3. | Water Sampling & Analysis | |
| | a. Technician Labor (4 hrs @ \$35/hr) | 140 |
| | b. Sample Analysis (2 @ 500/sample) | 1,000 |
| 4. | Closure Certification | |
| | a. Engineer Labor (16 hrs @ \$75/hr) | 1,200 |
| | b. Engineer Expenses (2 days @ \$100/day) | 200 |
| | | <hr/> |
| | Subtotal | \$6,250 |
| | Contingency: 15 percent | \$938 |
| | Administration: 15 percent | \$938 |
| | | ===== |
| | Total | \$8,126 |

Figure 7

CLOSURE COST ESTIMATE, M-47

| | | |
|----|---|-------------------|
| 1. | Removal and Disposal of Waste Inventory | <u>Total (\$)</u> |
| | a. Transportation to Burn Grounds 80 hrs @ 75 | 6,000 |
| | b. Treatment & Disposal 840,000 lbs @ .25 | 210,000 |
| 2. | Sweep/Clean Facility Pad | |
| | a. Technician Labor (10 hrs @ \$35/hr) | 350 |
| 3. | Closure Certification | |
| | a. Engineer Labor (10 hrs @ \$75/hr) | 750 |
| | b. Engineer Expenses (2 days @ \$100/day) | 200 |
| | | <hr/> |
| | Subtotal | \$217,300 |
| | Contingency: 15 percent | \$32,595 |
| | Administration: 15 percent | \$32,595 |
| | | ===== |
| | Total | \$282,490 |

Figure 8

CLOSURE COST ESTIMATE, M-603

| | | |
|----|---|-------------------|
| 1. | Removal and Disposal of Waste Inventory | <u>Total (\$)</u> |
| | a. Transportation to Burn Grounds 60 hrs @ 75 | 4,500 |
| | b. Treatment & Disposal 240,000 lbs @ .25 | 60,000 |
| 2. | Sweep/Clean Facility Pad | |
| | a. Technician Labor (10 hrs @ \$35/hr) | 350 |
| 3. | Closure Certification | |
| | a. Engineer Labor (10 hrs @ \$75/hr) | 750 |
| | b. Engineer Expenses (2 days @ \$100/day) | 200 |
| | | <hr/> |
| | Subtotal | \$65,800 |
| | Contingency: 15 percent | \$9,870 |
| | Administration: 15 percent | \$9,870 |
| | | ===== |
| | Total | \$85,540 |